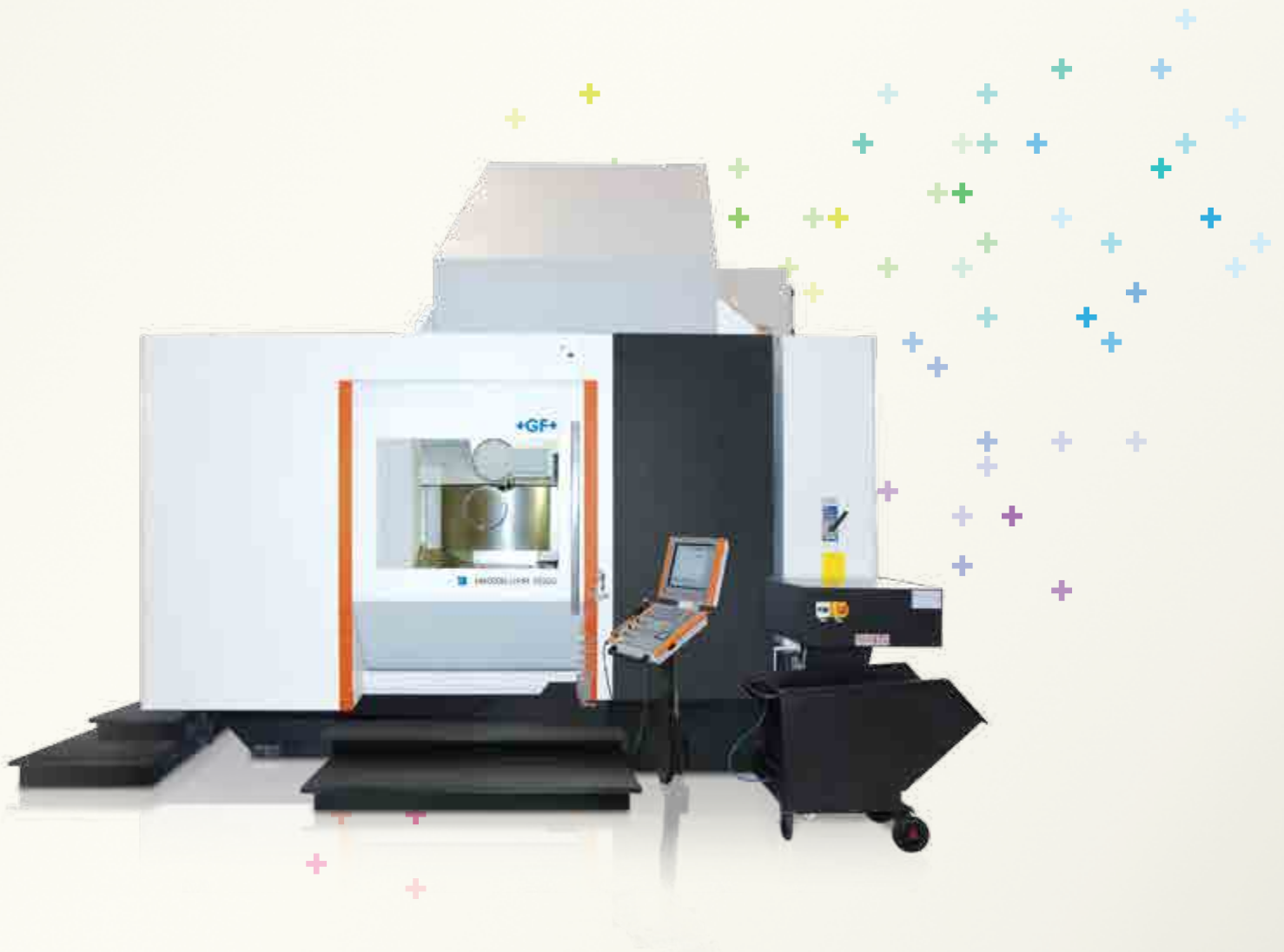


Mikron

HPM 1850U



Swiss design and quality

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GF Machining Solutions

The Mikron HPM 1850U is designed for universal production of high quality parts.

The very latest Swiss motor driven spindles, directly-driven circular and swivel axes and a stable machine body offer the very best conditions to manufacture modern tools economically and precisely.

Applications

Mikron HPM 1850U used for a broad spectrum of parts ...



Turbines and compressor discs

Extreme high temperature resistant tough steels

Aerospace

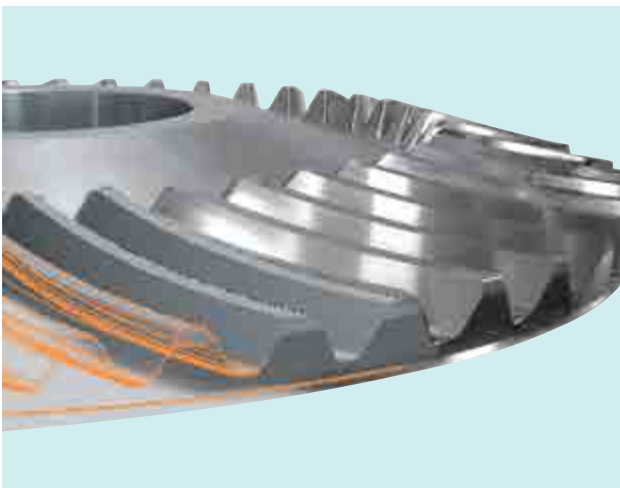
- + High stability and precision
- + Very good surface quality
- + Absolute process security



An aircraft structural part

Aerospace

- + Good surface qualities obtained, also for simultaneous machining
- + High machining performance
- + Machining all around the workpiece thanks to the large swivelling range

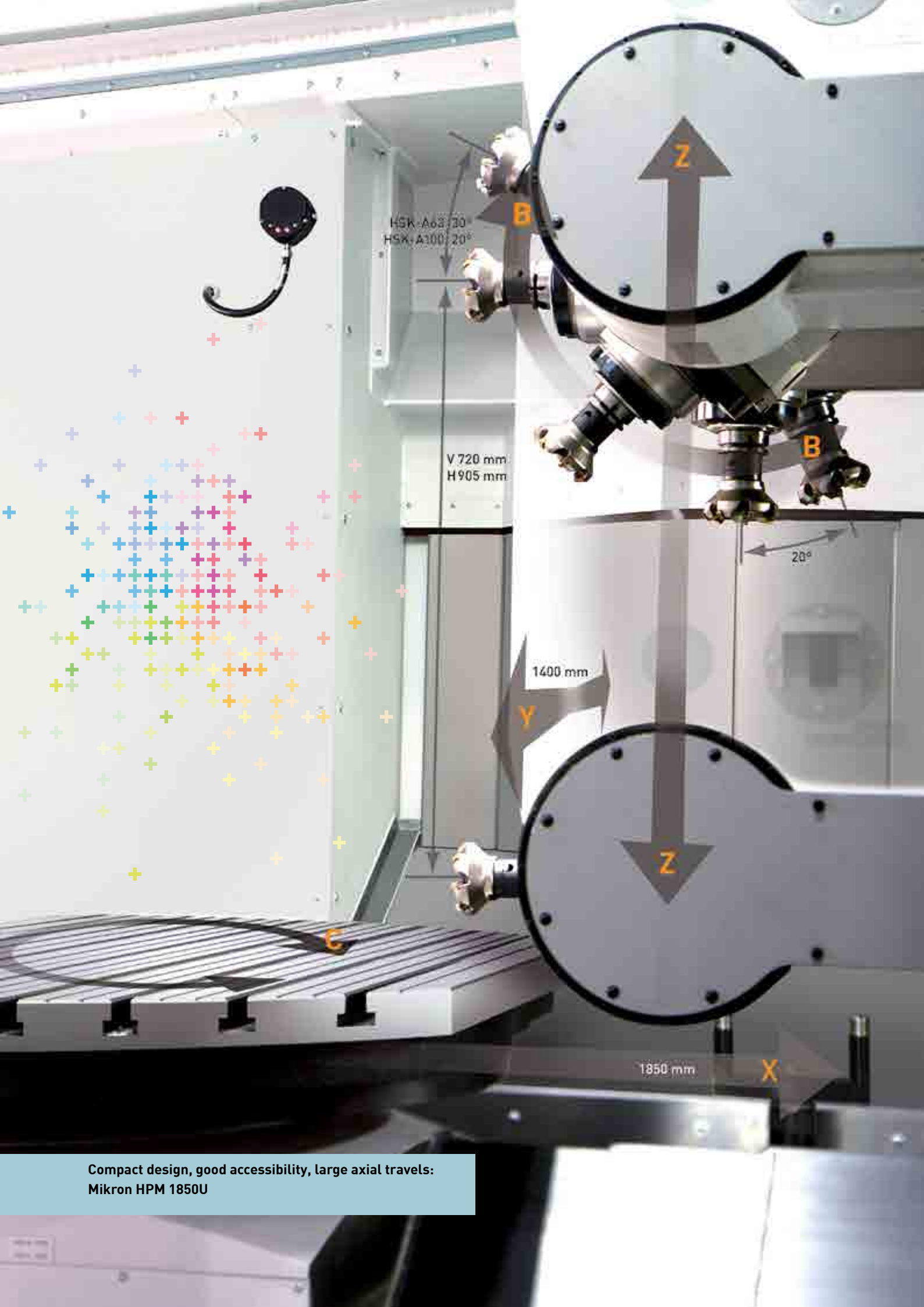


Bevel gear wheel

Hard machining

Transmission

- + High stability and precision
- + Very good surface quality
- + Absolute process security
- + Quality achieved: Q3



HSK-A63/30
HSK-A300/20°

V 720 mm
H 905 mm

1400 mm

1850 mm

20°

Compact design, good accessibility, large axial travels:
Mikron HPM 1850U

Highlights

Mikron HPM 1850U

Efficient rough as well as precise finish machining

The pallet can be turned manually to offer optimal access to the workpiece

A pallet magazine for workpieces up to 1750 kg in weight

The B and C axes can be clamped together for rough machining. Increased tool life.

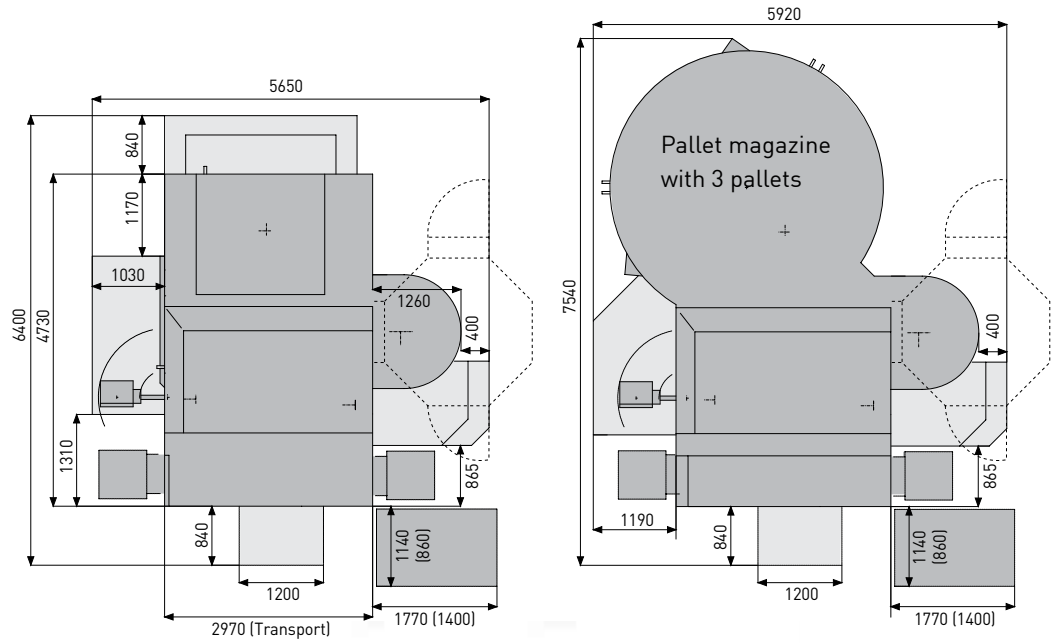


Two loading stations.
The pallets can be lowered hydraulically to a comfortable working height for loading and unloading.
There is no platform.
This means that the machine takes up less floor space.

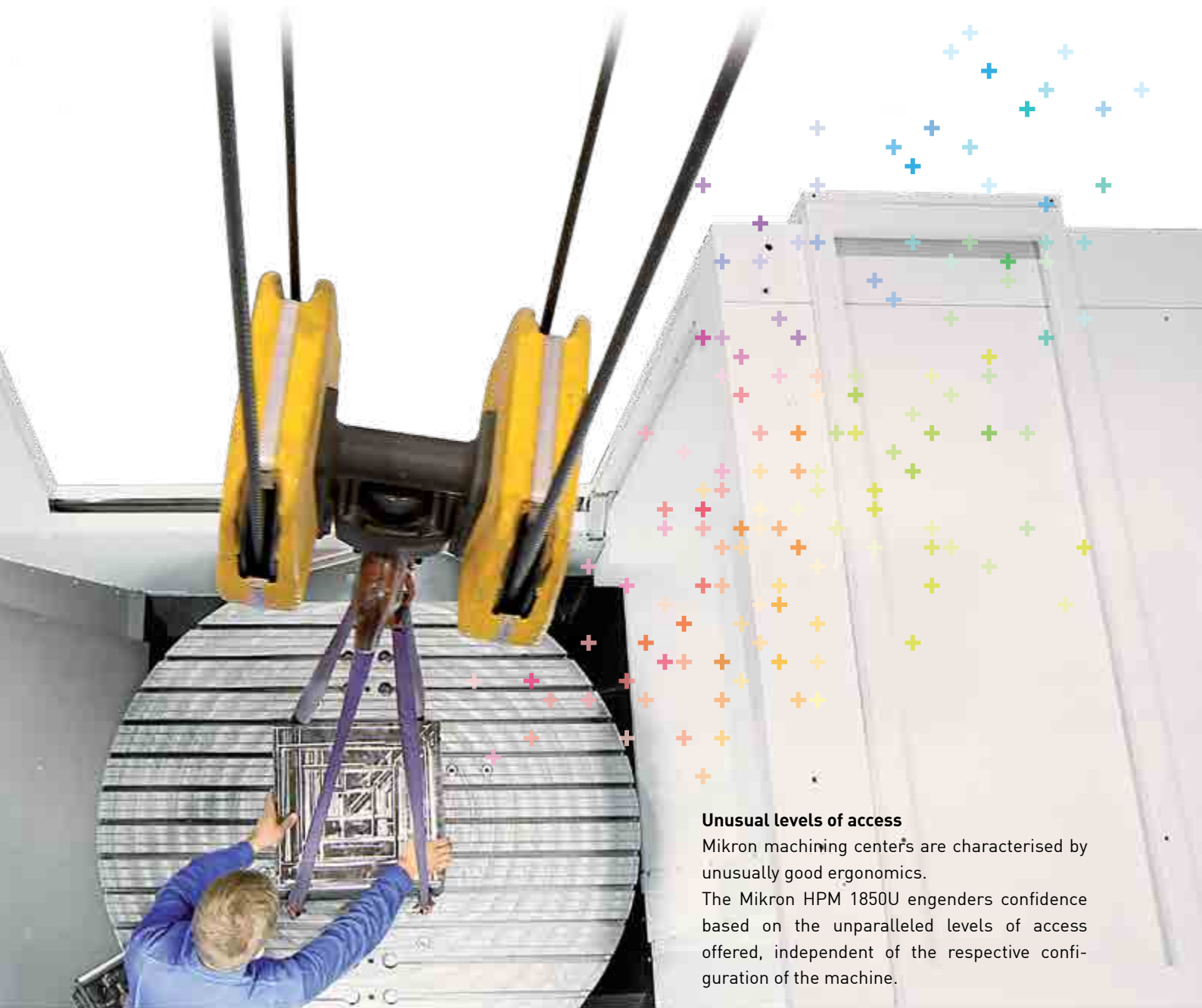
A one-piece machine bed made out of a casting



APS, APS extended, ITC, Adaptive Control.
These and further smart machine modules guarantee even more flexibility and process security for the production of high quality components.



View from above onto the rotary table of the Mikron HPM 1850U.
Maximum load: 4000 kg



Unusual levels of access

Mikron machining centers are characterised by unusually good ergonomics.

The Mikron HPM 1850U engenders confidence based on the unparalleled levels of access offered, independent of the respective configuration of the machine.

Working space

Mikron HPM 1850U without pallet magazine



Mikron HPM 1850U with pallet magazine

With or without pallet magazine:

- + Loading by crane and access to the workpiece are optimal
- + Perfect dropping away of the chips due to the steep smooth cabin walls



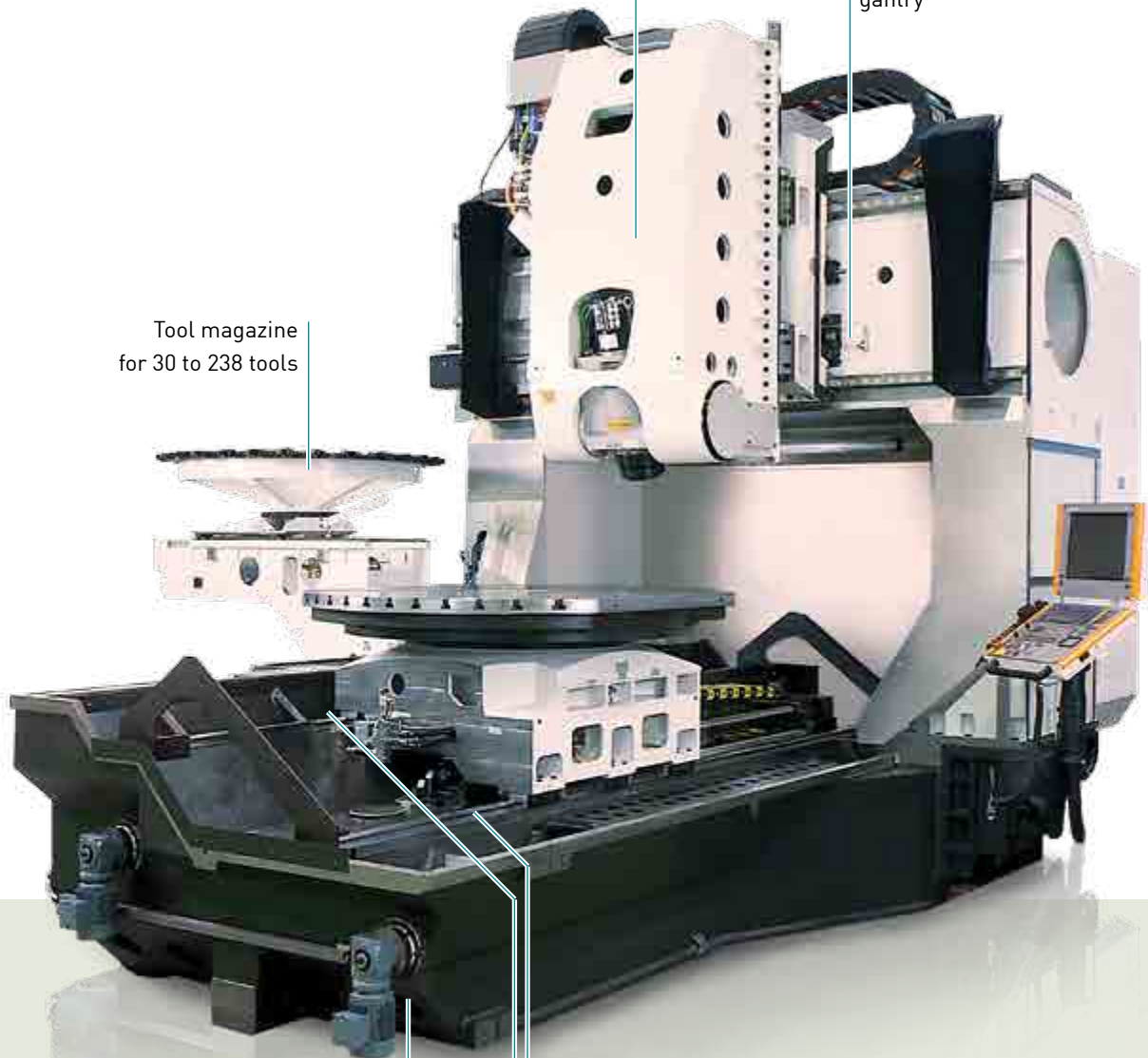
The basic machine

A thought-through basic design for maximum rigidity

A new-type of construction of the Z-axis. 300 kg lighter than a comparable axis made out of a casting for the same stability and even better vibration damping.

Low temperature influences due to the interconnected mechanical gantry

Tool magazine for 30 to 238 tools



The machine bed is cast out of one piece and stands on 3 main feet. This leads to a shorter start-up time.

Two levels and distance between the guideways of more than 800 mm in the X-axis guarantees absolute torsional rigidity and stability during rough machining. This particularly plays a role when heavy workpieces cannot be clamped centrally on the rotary table and these are turned.

High tech spindle

Constant machining in the HPC area

Tool spindles for demanding machining operations

Whatever machine configuration you choose you will always obtain the latest tool spindles with your Mikron HPM machine.

+ A high torque

15'000 min⁻¹ HSK-A63

10'000 min⁻¹ HSK-A100

The ideal spindle for universal use

+ For high spindle speeds

24'000 min⁻¹ HSK-A63

An oil-air lubrication system with suction removal of the used oil.

Optimal for machining materials which should be machined at the highest cutting speeds or for tools with a small diameter.

The facts

- + Vector regulation for the obtaining maximum torque in the lowest rotational speed range
- + A highly stable ceramic-hybrid spindle bearing system
- + Spindle jacket cooling by means of a regulated coolant circuit for constant temperatures during the whole operating period
- + Integrated "smart machine" sensors

Your benefits

- + The highest levels of precision and a high machining performance
- + Shorter acceleration phases
- + A high torque at lower rotational speeds
- + Thread cutting without a compensating chuck



Step-Tec

Since 1995 the Swiss company Step-Tec has developed, manufactured, sold and repaired motor-driven spindles for leading manufacturers of machining centers for milling and drilling applications.

Step-Tec is in a position to manufacture rapidly running and at the same time, very precise high performance spindles with an integrated motor. The machining times for obtaining optimal quality have been drastically reduced using these high quality motor-driven spindles.



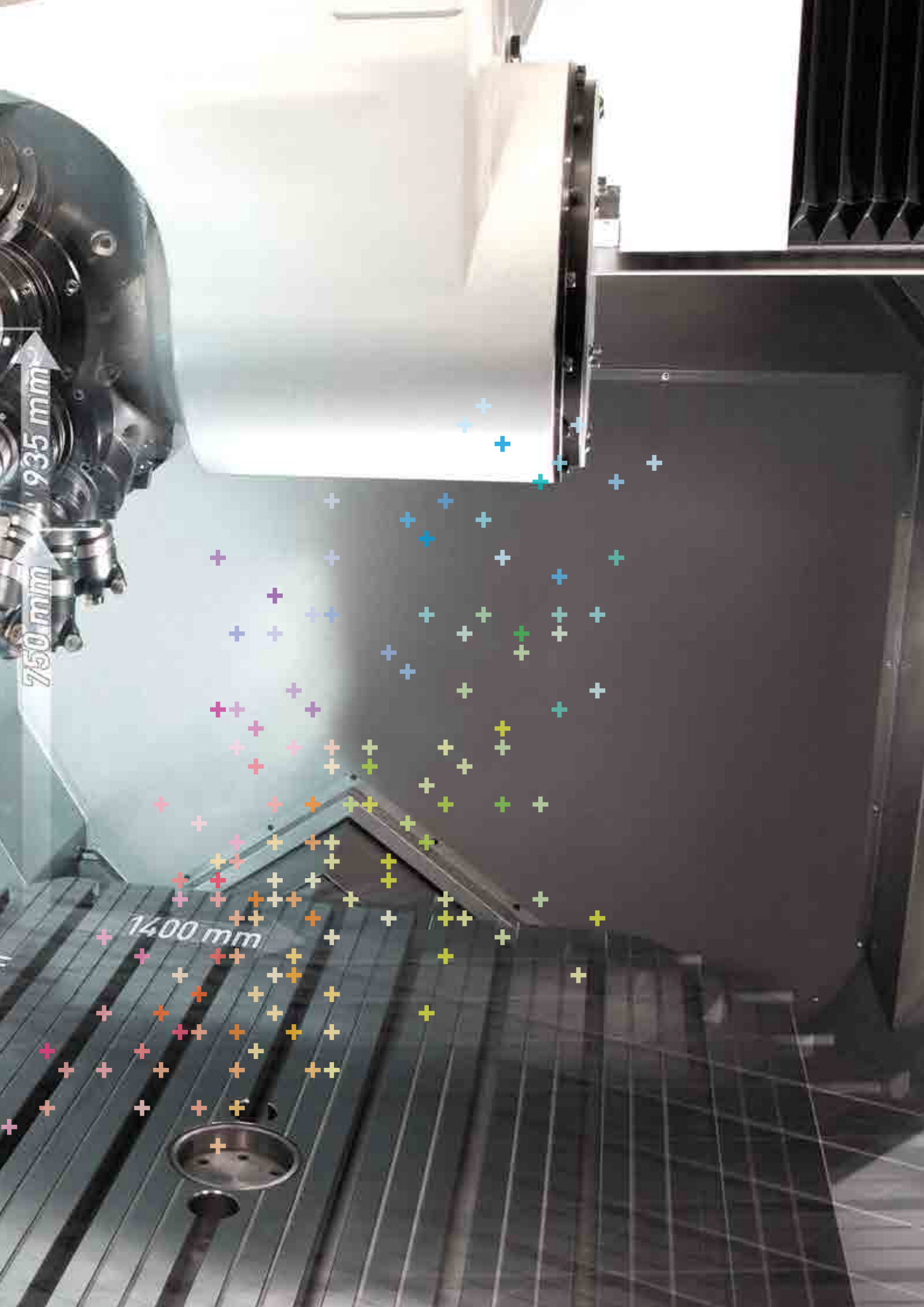
The scope of delivery includes the smart machine module APS (Advanced Processing System) for reliable recording and display of vibrations produced during the milling process.



Universal production of high quality parts



1850 mm



935 mm

750 mm

1400 mm

Pallet magazine

Economic efficiency and flexibility The pallet magazine and the tool m minimum space



The normal work table height is reached without a platform through hydraulic lowering.



Flexibility

Special parts can be clamped on and prepared during the main operating time, also during series production.

Automated machines can be kept in continual use, also when only one shift is being worked in the production area. A significantly longer running time per day is possible in this way compared to a machine without a pallet magazine.

Ergonomics

- + The pallets in the 2 equipping places are lowered hydraulically to a height which is comfortable for the operator
- + The lifting and lowering movements of the pallets are very well absorbed vibrations and do not disturb the milling process
- + The pallets can be turned manually within the two equipping places 360° and locked in position 8x (45°)
- + There is no need for a platform
- + A space-saving design
- + No additional steps or gratings
- + Optimal working conditions for the operator



through automation: magazine in various sizes needing



Tailor-made solutions for your production requirements

User-friendly equipping with tools leads to productivity and process security

- + Simultaneous machining and equipping
- + Simple manipulation
- + Ergonomic access



HSK-A100: 30 tools
HSK-A63: 45 tools

HSK-A63: 120 tools
Floor space requirements: 1.5 m²



Options

Our machines are prepared for a large number of options



Touch probe radio RMP 60



Laser tool measurement



Minimum quantity lubrication and cooling



Motor-driven spindle for 60,000 rpm



A rotating viewing window



Suction removal of mist



Internal tool cooling



A belt filter plant



Tool magazine
HSK-A100: 30 tools
HSK-A63: 45 tools



Tool magazine
HSK-A63: 120 tools



Tool magazine
HSK-A100: 170 tools
HSK-A63: 238 tools



Operating modes 3+4

APS
CAMplete
Econowatt
SIGMA FMC
ITC
ITC 5X
ITM
OSS
OSS extended
OSS extreme
PFP
RNS
SPS
 smart machine Module

HEIDENHAIN

Control unit HEIDENHAIN

SIEMENS

Control unit SIEMENS

smart machine

The new dimension in modern production

Bringing intelligence into the milling process is the intended aim of “smart machine”.

This includes a range of modules that are collectively referred to under the generic term “smart machine” and that fulfil various functions. In order to make the milling process “intelligent”, various requirements have to be implemented.

First of all, establishing comprehensive communication between man and machine, which makes precise information that the operator requires to assess the milling process available to him. Secondly, supporting the operator in the optimisation of the process, which considerably improves the performance. Thirdly, the machine optimises the milling process, which improves the process safety and the quality of the workpiece - above all in unmanned operation.

The facts

- + Greater accuracy in shorter machining times
- + Increase in the workpiece surface quality as well as the surface and shape accuracy
- + Recognition of critical machining strategies
- + Improvement in the process safety
- + Reduction of the machine set due to longer service life
- + Higher availability
- + Better operating comfort
- + Considerable increase in reliability in unmanned operation

smart machine construction kit system

Each of the modules fulfils a specific task. Just like in a construction kit, the user can select the modules that seem to him to be the best option for improving his process.

Your benefit

Producing the workpieces in a process-secure and precise manner, increasing the reliability in unmanned operation, increasing the service life of the machine and significantly reducing production costs.



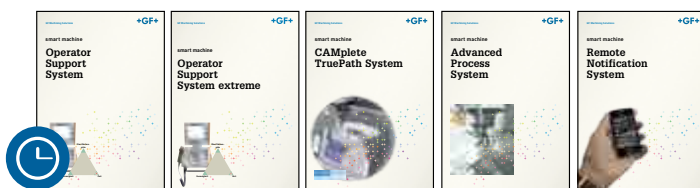
Saving energy



Protection



Precision



Productivity

The smart machine is constantly being further developed. The currently available modules can be found at www.gfms.com

Technical data



Mikron HPM 1850U

Working range

Longitudinal	X	mm	1850
Cross	Y	mm	1400
Vertical	Z	mm	720 / 905
A-axis		°	-20 / +120 (110)
C-axis		°	n x 360
Number of simultaneous axis		pce.	5 axis / 5 simultaneous

Feed rate

Feed rate / Rapid traverse	X, Y	m/min	15 / 40
Feed rate / Rapid traverse	Z	m/min	15 / 40
Feed rate / Rapid traverse	A	min ⁻¹	11 / 20
Feed rate / Rapid traverse	C	min ⁻¹	30

Working spindle

Working spindle 10`000	Spindle power 40% ED	kW	34
HSK-A100	Spindle torque 40% ED	Nm	324
Working spindle 15`000	Spindle power 40% ED	kW	38
HSK-A63	Spindle torque 40% ED	Nm	193
Working spindle 24`000	Spindle power 40% ED	kW	30
HSK-A63	Spindle torque 40% ED	Nm	75

Accuracy XYZ ISO 230-2(97)

Accuracy	A	µm	10 / 8 / 6
Repeatability	R +/-	µm	6 / 5 / 4

Work table

Clamping surface		Ø mm	1600
Max. workpiece weight		kg	4000

Automation

Pallet magazine		Positions	3
Pallet size		mm x mm	1000 x 1250
Tool magazine	HSK-A63	Positions	45, 120, 238
	HSK-A100	Positions	30, 170

Control unit

Heidenhain		iTNC 530
Siemens		840 D

Weight

Machine weight		kg	25`000 - 31`500
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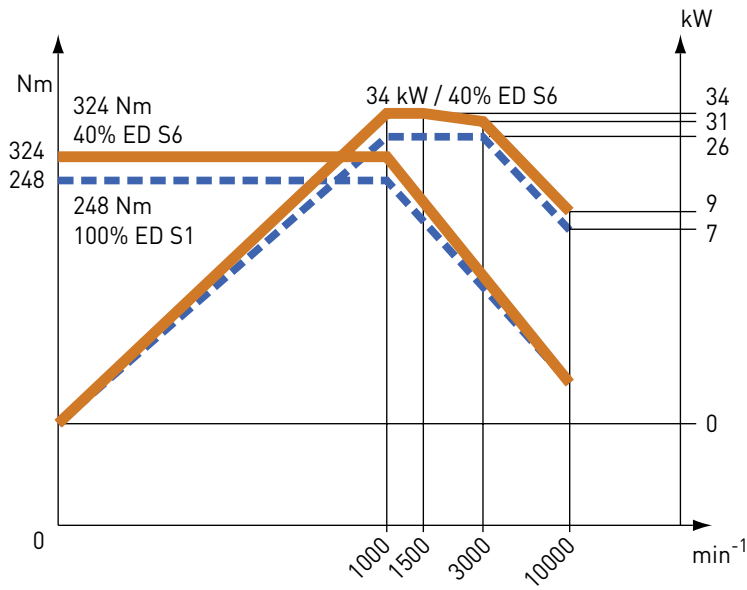
smart machine

APS, APS extended, Adaptive control, ITC

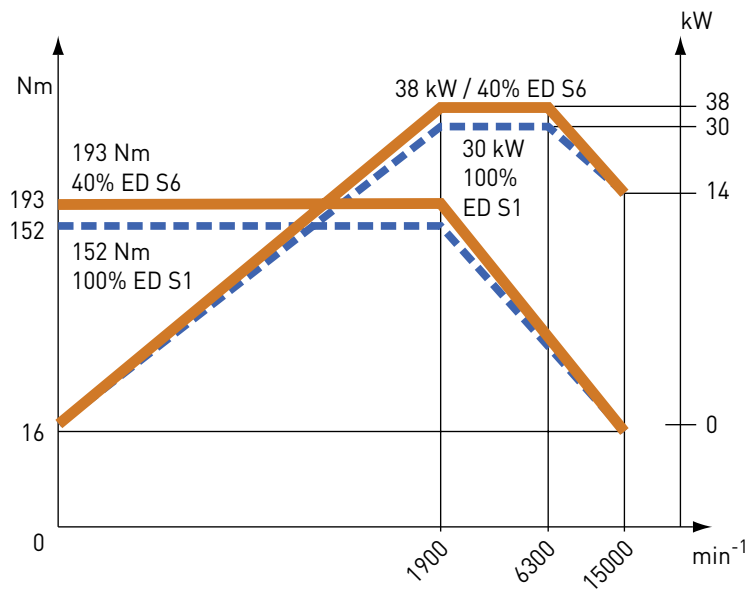
Ancillary services

Programming courses		+
Technology courses		+
Service training courses		+

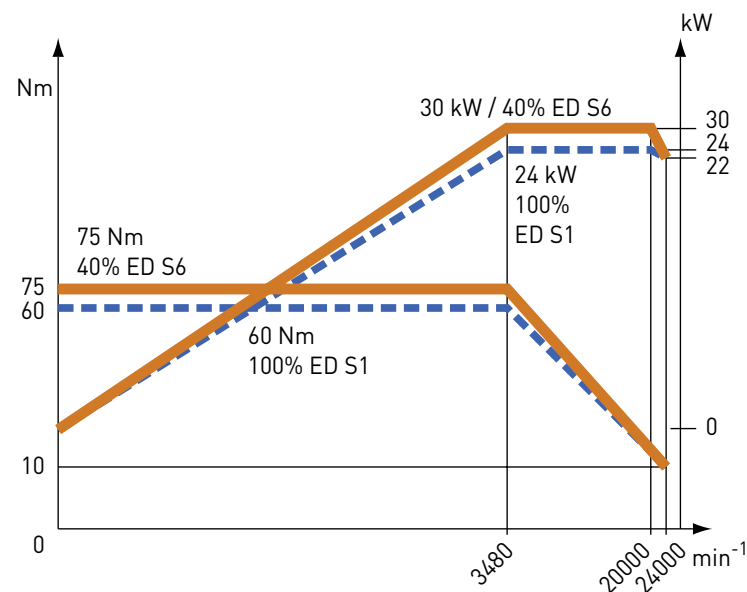
Mikron HPM 1850U



HPM 1850U
HSK-A100 / 10'000 min⁻¹

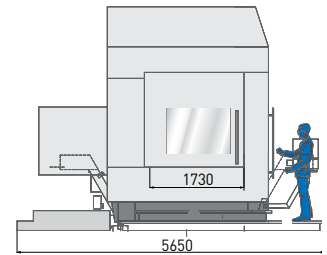
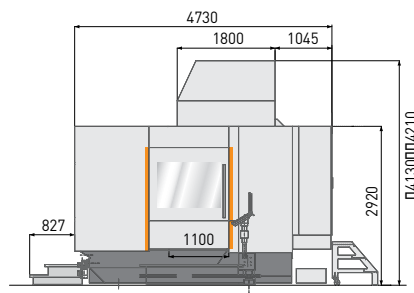
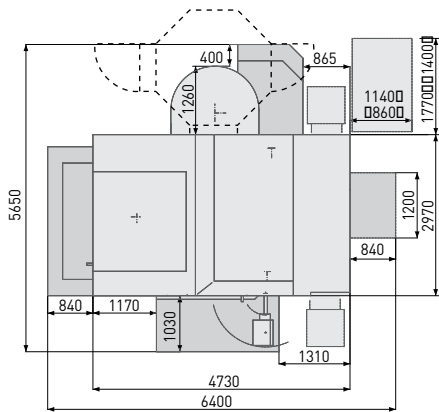
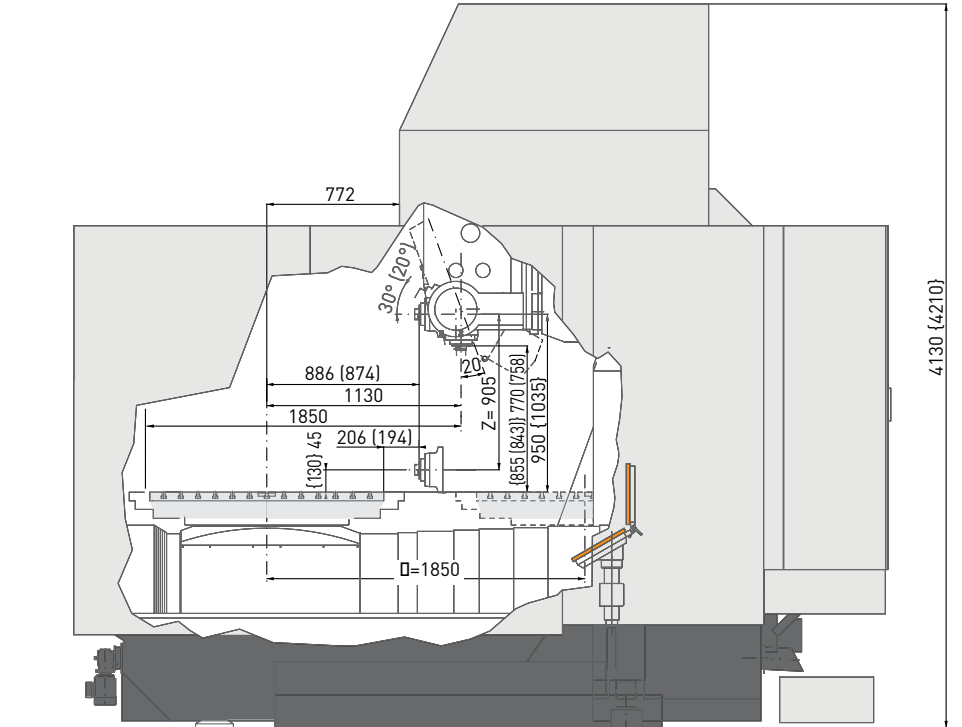


HPM 1850U
HSK-A63 / ISO-B40 / 15'000 min⁻¹

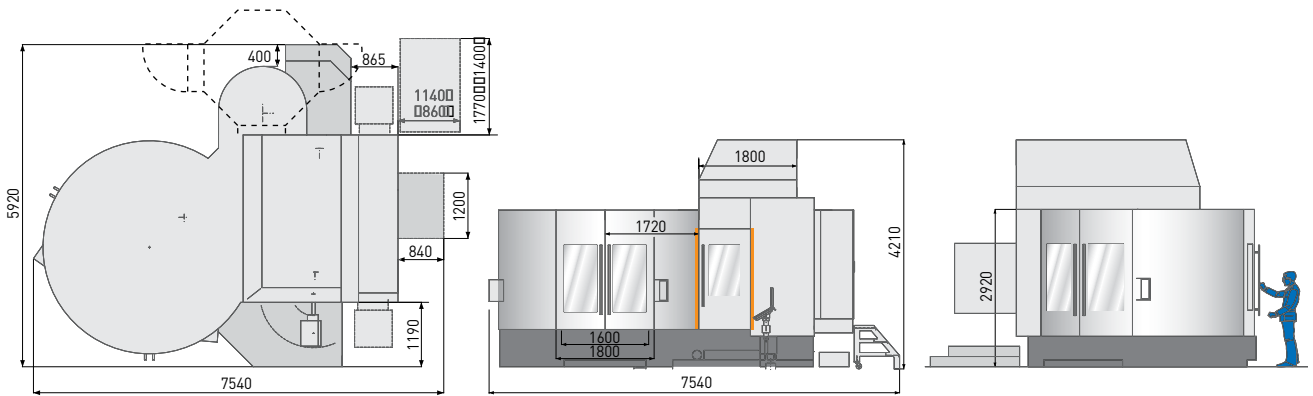
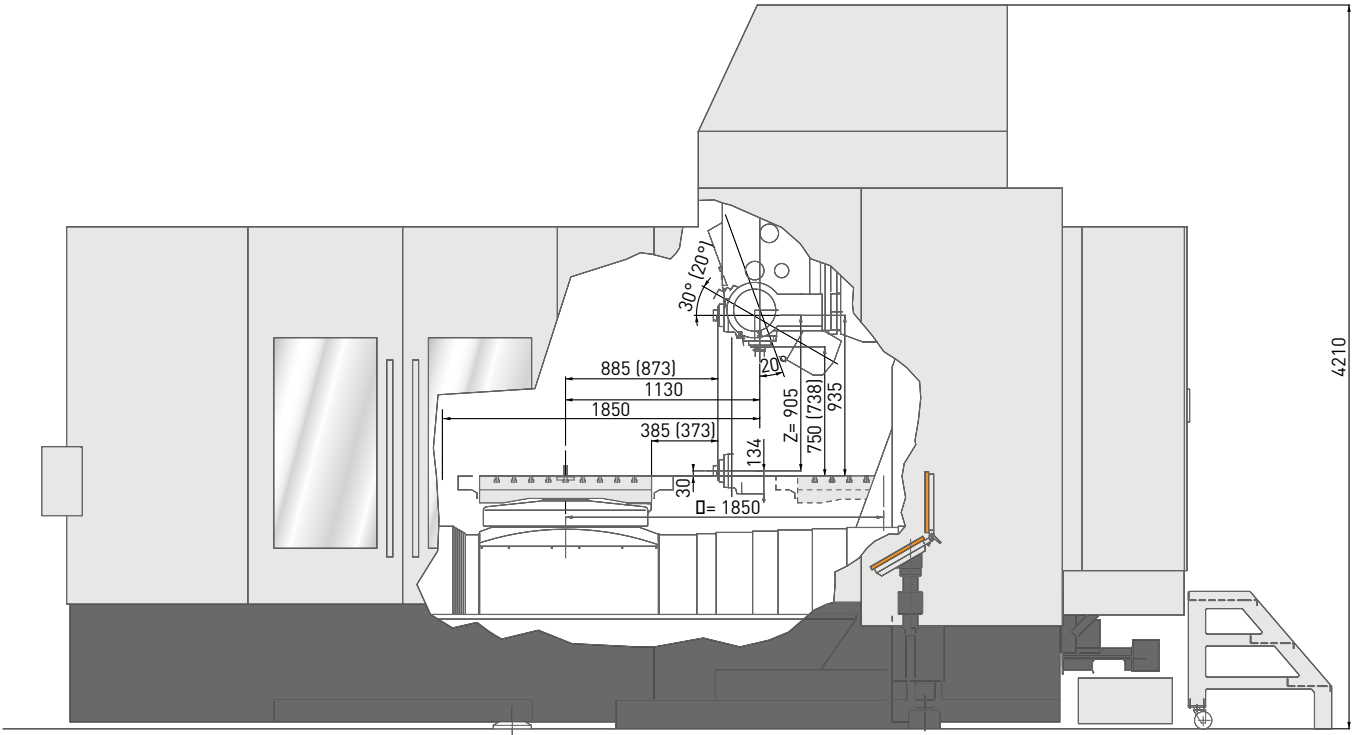


HPM 1850U
HSK-A63 / 24'000 min⁻¹

HPM 1850U without Pallet magazine
HSK-A63 (HSK-A100) {with increased through}



HPM 1850U with Pallet magazine
HSK-A63 (HSK-A100)



GF Machining Solutions



Milling

High-Speed and High-Performance Milling Centers. In terms of cutting speed, HSM centers are 10 times faster than conventional milling machines. Greater accuracy and a better surface finish are also achieved. This means that even tempered materials can be machined to a condition where they are largely ready to use. One essential advantage of HSM is that with systematic integration, the process chain can be significantly shortened. HSM has developed alongside EDM into one of the key technologies in mold and tool making.



EDM

Electric Discharge Machines. EDM can be used to machine conductive materials of any hardness (for example steel or titanium) to an accuracy of up to one-thousandth of a millimeter with no mechanical action. By virtue of these properties, EDM is one of the key technologies in mold and tool making. There are two distinct processes — wire-cutting EDM and die-sinking EDM.



Laser

Laser texturing. Laser texturing supplements and extends the technologies offered by GF Machining Solutions. With our laser technology we enable you to produce texturizing, engraving, microstructuring, marking and labeling of 2D geometries right through to complex 3D geometries. Laser texturing, compared to conventional surface treatment using manual etching processes, offers economic, ecological and design advantages.



Automation

Tooling, Automation, Software. Tooling for fixing workpieces and tools; automation systems and system software for configuring machine tools and recording and exchanging data with the various system components and design advantages.



Customer Services

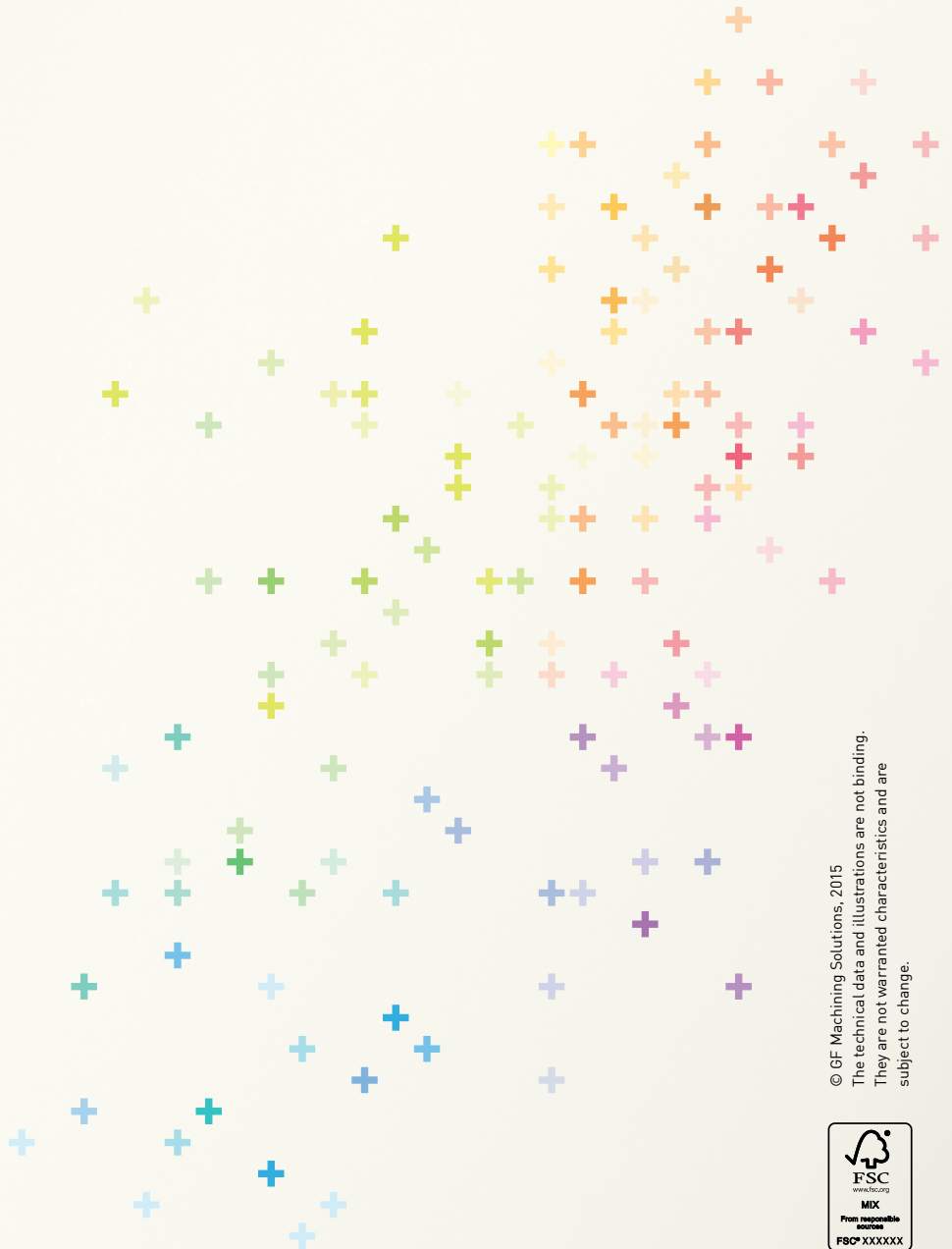
Operations, Machine and Business Support. Customer Services provides with three levels of support all kind of services for GF Machining Solutions machines. Operations Support offers the complete range of original wear parts and certified consumables including wires, filters, electrodes, resin and many other materials. Machine Support contains all services connected with spare parts, technical support and preventive services. Business Support offers business solutions tailored to the customer's specific needs.



At a glance

We enable our customers to run their businesses efficiently and effectively by offering innovative Milling, EDM, Laser and Automation solutions. A comprehensive package of Customer Services completes our proposition.

www.gfms.com



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